



## Department of Energy

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DOE/EA-1890

### Notice of Adoption and Finding of No Significant Impact Reedsport PB150 PowerBuoy Deployment and Ocean Test Project Reedsport, Oregon

**AGENCY:** U.S. Department of Energy

**ACTION:** Adoption of the Federal Energy Regulatory Commission Environmental Assessment (FERC Project No. 12713-002) and the issuance of a U.S. Department of Energy Finding of No Significant Impact (FONSI)

**SUMMARY:** The U.S. Department of Energy (DOE) has selected Ocean Power Technologies (OPT) for approximately \$2.4 million in financial assistance and proposes to authorize the expenditure of federal funding to OPT for the construction, deployment, and ocean testing of a single, full scale 150kW PB150 PowerBuoy. The funding would support Phase 1 of OPT's proposed 3-phase project. At the end of the Phase 1 period, the buoy would be retrieved, undergo maintenance, and be redeployed as part of Phase 2 activities. Phase 2 would consist of installing ten PowerBuoys and interconnections to the electrical power grid. In Phase 3, OPT plans to reapply to FERC to amend the 10-PowerBuoy license to allow expansion of the project to 50 MW.

Because the full ten-buoy array planned for Phase 2 would be connected to the existing electrical grid, OPT applied to the Federal Energy Regulatory Commission (FERC) for an operating license for the project on February 1, 2010. The operating license application included extensive environmental analyses with which FERC used to conduct their review under the National Environmental Policy Act (NEPA) and to prepare the *Environmental Assessment for Hydropower License, Reedsport OPT Wave Park Project, Oregon (Wave Park EA)*. FERC announced the availability of the Wave Park EA on December 3, 2010 for public review and comment. All discussion, analyses, and findings related to the potential impacts of construction and operation of the full 10-buoy wave park are contained in the Wave Park EA and FERC's Finding of No Significant Impact (FONSI). DOE reviewed the FERC Wave Park EA and provided a Notice of Intent to Adopt and the EA for public review and comment; no comments were received. DOE determined the FERC Wave Park EA adequate and satisfactory in providing an upper limit of potential environmental impacts that could occur with the deployment and testing of the single 150 kW PB150 PowerBuoy. Accordingly, DOE adopts the FERC EA and incorporates it by reference into this FONSI. DOE was not a cooperating agency on the FERC EA.

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During Phase 1 of the project the single PB150 buoy would undergo two years of testing. During this time, the PowerBuoy would be monitored for power production capability, reliability, mooring, system performance, and sea-state responsiveness. Acoustic and electromagnetic field (EMF) testing would also be conducted. The tests would provide the performance and reliability data required to develop manufacturing methodologies to maximize production and minimize cost for the deployment in future wave parks. The initial buoy would not be connected to the electrical grid. The buoy would be moored approximately 2.5 miles from the Oregon coast in about 205 feet of water near Reedsport, Douglas County. The buoy would be 127 feet tall with 27 feet of its structure extending above the water's surface.

The FERC Wave Park EA addresses the potential environmental impacts from construction and operation of the full 10-buoy array, the deployment of 10 OPT PowerBuoys attached to seabed anchors, tendon lines, subsurface floats, catenary mooring lines, and subsea transmission line. The PowerBuoy units would be deployed in an array of three rows, oriented at an angle to the shore and would occupy about 0.25 square mile of the Pacific Ocean. The 10 PowerBuoy units would be connected to a single underwater substation pod via power/fiber-optic lines. The subsea transmission cable, buried in the seabed to a depth of 3 to 6 feet, would extend from the underwater substation pod to the terminus of an existing wastewater discharge pipeline, about 0.5 mile offshore. The subsea transmission cable would be routed through the wastewater pipeline to a newly constructed underground vault inland of the sand dunes. At the vault, the transmission cable would transition to an underground transmission line, re-enter the existing wastewater pipeline, and be routed through the pipeline to the point at which it would connect to the Douglas Electric Cooperative transmission line at a proposed shore substation.

**Supplemental Information:** For purposes of this adoption, DOE's Proposed Action would be to authorize the use of Energy Efficiency and Renewable Energy (EERE) Wind and Water Program funds by OPT for the proposed construction, deployment and testing of a single PowerBuoy off the Oregon coast as described in the above summary. DOE's No-Action Alternative is consistent with that analyzed in the Wave Park EA in that it assumes that if the DOE did not authorize the use of the funds, OPT would either not proceed with the Phase 1 Project or seek alternative funding.

The purpose of DOE's Proposed Action is to support the mission of the EERE Program, which works to improve the performance, lower the costs, and accelerate the deployment of innovative wind and water power generation technologies. The need is to harness greater use of the nation's abundant wind and water resources for electric power generation to help stabilize energy costs, enhance energy security, and improve the environment through reduced use of fossil fuels.

**Environmental Impact Analysis:** In compliance with the Council on Environmental Quality regulations for implementing NEPA, as amended (40 CFR Parts 1500 to 1508), the FERC Wave Park EA examines the potential environmental impacts of licensing OPT to construct and

operate a 10-PowerBuoy array as presented in the above summary. FERC provides a NEPA determination within Chapter 6 of the EA that states:

*On the basis of our independent analysis, we conclude that approval of the proposed action, with our recommended measures, would not constitute a major federal action significantly affecting the quality of the human environment. Preparation of an environmental impact statement is not required.*

As part of the adoption process, DOE reviewed the Wave Park EA for consistency with DOE's NEPA Implementing Procedures at 10 CFR Part 1021. FERC's environmental impact analyses are consistent with the resource categories and general level-of-detail DOE normally evaluates in its EAs and are summarized in the following paragraphs, with the exception of air quality and safety. DOE notes that occupational and public health and safety impacts were not addressed as part of the impact analyses sections, they were, however, addressed in Chapter 2 of the Wave Park EA. The project safety evaluation in that chapter addressed commitments to review the adequacy of project facilities and to conduct inspections during construction and operations to focus on safety of structures, identification of unauthorized modifications, and the continued efficiency and safety of operations. Other sections of the EA address emergency response and recovery measures, as well as site security and protection.

With regard to Air Quality, which is not discussed in the Wave Park EA, considering the ocean environment and limited on-shore activities, and that the buoys would not be emitters of any air pollutants, DOE has concluded there would be no adverse impacts on the air quality of the region. The project, however, would result in some beneficial impacts in that the Wave Park would reduce the reliance on fossil fuels to generate electricity. Also, based on DOE evaluation of the proposed full 10-PowerBuoy array, there would be no impacts to utility requirements or public services. This assessment is based upon the assumption that the small work force would be filled by local workers and/or result in retention of the existing workforce. The area of Reedsport and Douglas County, where activities associated with the proposed project would occur, is sparsely populated.

General. OPT's project design, coupled with applicant committed and FERC required measures, would minimize the potential environmental effects during construction and operations. Key points include the relatively small scale of the project, a phased installation plan, mooring and navigation lighting systems designed to minimize potential adverse effects on whales and seabirds, and routing a portion of the subsea transmission cable and the entire terrestrial transmission line through an existing wastewater discharge pipeline to avoid beach, dune, and terrestrial habitats. OPT's proposal also includes commitments to conduct monitoring efforts to identify any potential mitigation measures that may be required in the future, which is considered an adaptive management approach to the project.

Geology and Soil Resources. Construction and operation of the project would likely have minor effects on geologic and soil resources such as short-term suspension of sediments when anchors are installed and the subsea transmission cable is buried. Any effects on sediment transport processes along the shoreline are unlikely given the small scale of the project and its distance from shore. OPT's proposed wave, current, and sediment transport monitoring would help identify and quantify any unanticipated effects on geologic and soil resources and reduce any remaining uncertainty.

Water Resources. Construction and operation of the project would likely have minor effects on water resources such as short-term increases in turbidity during project construction, minor changes in wave height on the shoreward side of the PowerBuoy array, and a minor potential risk of spills of hydraulic fluids from the PowerBuoys, or of fuel from vessels used during construction and maintenance of the project. The proposed wave, current, and sediment transport monitoring, and fish and invertebrate monitoring would help identify and quantify the scale of any unanticipated effects on water currents or water quality and identify any potential mitigation measures that may be needed. The Prevention, Control, and Countermeasure Plan would help minimize the potential for spills of hydraulic fluids or fuels, as well as the extent of adverse effects of any spills that do occur. FERC required measures for identifying any hazardous liquids in the underwater substation pod and methods to detect leaks would help prevent any potential adverse effects on water quality.

Aquatic Resources. The placement of underwater components of the project would likely cause some changes in the composition and abundance of the fish and invertebrate community, reducing the amount of habitat for species adapted for burrowing in the seabed and creating habitat for structure-oriented species. Designation of the project area as a No Fishing Zone would benefit many aquatic species by providing a refuge from harvest and from habitat damage associated with some types of fishing gear. Enhanced habitat conditions for larger fish of some species would likely increase predation on smaller fish. The proposed fish and invertebrate, EMF, and acoustic monitoring would help evaluate any unanticipated adverse effects on aquatic resources and identify any potential mitigation measures that may be needed. A FERC required measure to review monitoring data from the single PowerBuoy would allow the need for any project modifications to address any unanticipated adverse effects from EMF or acoustic emissions to be assessed before additional PowerBuoys are installed.

Marine Mammals, Reptiles, and Birds. The PowerBuoy array would be deployed within the migration route of gray whales. However, construction activities would be scheduled outside of the gray whale migration period, and the noise levels caused by project operation are not expected to adversely affect whales because they are expected to be similar to the background levels. Construction-related noise may have a minor and temporary effect on other species of whales that have the potential to occur in the project area, but the noise levels are not expected to be of sufficient magnitude to cause hearing loss or other injuries. There is some potential for whale entanglement on project structures, especially if any derelict fishing gear becomes entangled on the array; however, this potential would be reduced by the removal of any

entangled gear that is found during periodic underwater inspections that would be conducted under OPT's proposed operation and maintenance plan. Because Oregon's near shore waters are a migration corridor for a variety of water birds, there is some potential for birds to be injured or killed if they collide with above-water portions of the PowerBuoys. However, given the proposed project configuration and buoy design, and the features built into the navigation lighting system to minimize bird attraction, the potential for bird collision is low. Unanticipated adverse effects on whales and seabirds, and potential methods to address them, would be evaluated through monitoring. As part of FERC required measures, increasing the frequency of underwater inspections for fishing gear entangled with project structures during the first year of project operation would reduce the potential for whale entanglement. The review of monitoring data from the single PowerBuoy would allow OPT to implement any additional monitoring or measures that may be needed through the Adaptive Management Process to address any unanticipated adverse effects from EMF or acoustic emissions to be assessed before additional PowerBuoys are installed.

Terrestrial Resources. The only onshore areas that would be altered by the project have been previously disturbed. As a result, no adverse effects on terrestrial resources are anticipated. A FERC required measure for modification of the Terrestrial and Cultural Resources Plan would provide additional protection for terrestrial resources if new information identifies the potential for adverse effects.

Threatened and Endangered Species and Essential Fish Habitat. There is a minor potential that attraction of predacious fish, seals, sea lions, and birds to the project could result in increased predation on listed species of salmon. There would also be a minor potential for entanglement or injury to listed species of whales that pass through the project area and for collision injury to marbled murrelets. However, the project's small scale and the distance between project features is unlikely to attract salmon or increase the rate of predation on salmon, and as discussed above, the potential for adverse effects on whales and offshore avian species during project construction and operation is low. Several monitoring programs would be undertaken to identify unanticipated adverse effects on fish and invertebrates, pinnipeds, cetaceans, and offshore avian species. A FERC required measure to increase the frequency of inspections for fishing gear entangled with project structures during the first year of project operation would reduce the potential for whale entanglement, and review of monitoring data from the single PowerBuoy would allow unanticipated adverse effects from EMF or acoustic emissions to be assessed before additional PowerBuoys are installed. The project is unlikely to alter beach habitat that supports the western snowy plover, and any unanticipated adverse effects would be evaluated through the proposed wave, current, and sediment transport monitoring program.

Recreation, Ocean Use, and Land Use. Access to the PowerBuoy area for crabbing and commercial and recreational fishing would be precluded if the area is designated as a No Fishing Zone by the Oregon Fish and Wildlife Commission or access is restricted by the Commission for public safety purposes. In addition, crabbers would likely experience some loss

of gear and fishing time associated with entanglement of crabbing gear on project structures during storms and gear damage caused by vessels needed to construct and maintain the project. The loss of fishing area would likely be mitigated to some extent by increased crab densities and catch rates in areas adjacent to the project, and the measures proposed by OPT in its Crabbing and Fishing Plan should help minimize any adverse effects on navigation, crabbing, and fishing. These measures include developing a protocol to recover or provide mitigation for fishing gear that becomes entangled in project mooring lines. Any adverse effects on shore recreation and land use would be minor because only limited shore-based construction would occur, the construction period would be brief, and all activities would occur in previously disturbed areas. FERC required measures for modification of the Crabbing and Fishing Plan to refine several elements would help ensure that any adverse effects on recreation and ocean use are minimized.

*Aesthetic Resources.* The size of the PowerBuoys when viewed from shore would be approximately 1.6 millimeters at arm's length. At night, the PowerBuoys would be lit for navigational safety. Under clear conditions these lights would appear as pinpoints on the horizon, creating a minor visual change to relatively unbroken nighttime ocean views off the Oregon Coast. Because most construction activity would take place more than 2 miles offshore, the work vessels that would be present during construction would not be visually obtrusive when viewed from shore. Therefore, aesthetic effects would be minor.

*Cultural Resources.* Implementation of the Terrestrial and Cultural Resources Plan would ensure that unknown cultural resource properties or human remains would be identified and avoided. Requirements for consultation with area tribes and the Oregon SHPO, regarding unanticipated discoveries of cultural materials or human remains during construction activities and over the license term and regarding any new post-construction land clearing or ground disturbing activities undertaken in the future, would provide additional protection to cultural resources.

*Socioeconomics.* Construction and periodic maintenance activities associated with the project would provide temporary employment for up to 180 skilled workers for 6 months, and operation of the project would provide 8 full-time jobs.

*Environmental Justice.* Although the Wave Park EA did not specifically address potential impacts to low-income or minority populations, it clearly demonstrates that the Wave Park project would not result in high and adverse impacts to any sector of the human population and therefore would not result in any environmental justice impacts.

**Determination:** Based on the independent review of the Wave Park EA, DOE determined that authorizing the expenditure of federal funding to OPT for the deployment and ocean testing of a single full scale 150kW PB150 PowerBuoy would not constitute a major federal action significantly affecting the quality of the human environment within the context of NEPA. Therefore the preparation of an environmental impact statement is not required and DOE

hereby Adopts FERC's *Environmental Assessment for Hydropower License, Reedsport OPT Wave Park Project, Oregon.*

The FERC Wave Park Final EA is available at:

[http://www.eere.energy.gov/golden/NEPA\\_FEA\\_FONSI.aspx](http://www.eere.energy.gov/golden/NEPA_FEA_FONSI.aspx)

For questions about this FONSI, please contact:

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